

## REMARKS

In view of the above amendments and the following remarks, the Examiner is respectfully requested to withdraw the rejections and allow Claims 29-51, the only claims pending in this application.

Claims 42, 44, 46, 48 and 50 have been amended to replace "Katy-J" with the chemical name of Katy-J which is "polyhydroxy organic acid". Support for this amendment may be found at page 8, lines 30-33.

Claims 32, 33, 36, 39 and 41 were amended to remove the hyphen from the word "micro-organisms". Analogous amendments were made to the specification at pages 65, 75 and 105 (the Abstract of Disclosure). The Abstract of Disclosure has also been amended to replace "promotes" with "promote".

Claim 31 was amended to replace "orange worm" with "orangeworm" (see, e.g., Example 6 of the specification beginning at page 52).

Claims 43, 45, 47, 49 and 51 to correct a minor typographical error. As such, these claims have been amended to replace "arythrose" with "erythrose". Analogous amendments were made to the specification at the paragraph bridging pages 17-18.

Claims 42, 44, 46, 48 and 50 have been amended to correct a minor typographical error. As such, these claims have been amended to replace "PTPA" with "DTPA" (see, e.g., the specification at page 50).

Claim 41 has been amended to include pests. Support for this amendment may be found, e.g., at page 95, lines 21-25.

No new matter has been added.

As no new matter has been added by the above amendments, the Applicants respectfully request the entry thereof.

## REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 42, 44, 46, 48 and 50 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention because of the recitation of Katy-J which the Examiner indicated was a brandname. The claims have been amended to replace "Katy-J" with the chemical name of Katy-J which is "polyhydroxy organic acid".

The Advisory Action dated January 27, 2003 indicated that when entered, these amendments, which were previously submitted in Applicant's previous response dated December 10, 2002, would overcome this 35 U.S.C. 112, second paragraph rejection. Accordingly, the Applicant respectfully requests that this rejection be withdrawn.

**REJECTION UNDER 35 U.S.C. §102(b)**

In the Advisory Action dated January 27, 2003, the Examiner indicated that Claims 29, 30, 43, 34, 47, 37, 48 and 40 remain rejected under 35 U.S.C. §102(b) as being anticipated by Roth (4,065,287). In making this rejection, the Examiner stated that the term "vitamin/cofactor" is within the ambit of a "growth regulator" as defined by Roth.

It is respectfully submitted that a vitamin and/or a cofactor are not considered to be within the ambit of growth regulators. The Applicant submits that nowhere in Roth is there any mention of a vitamin or a cofactor. While Roth teaches forty-two specific examples of formulations, some having multiple sub-formulations, none of these specific examples disclose a vitamin or a cofactor. In fact, the only support that the Examiner has provided is the Examiner's own belief that "...if a vitamin or cofactor were needed by the plant and not absorbed, growth of the plant would cease. If the vitamin/cofactor were absorbed then growth would continue. The vitamin/cofactor is regulating the growth of the plant." The Examiner has not provided any reference or other evidence or referred to any art of record to support such a belief that a vitamin and/or cofactor are within the ambit of a growth regulator. As such, the Applicant respectfully submits that a vitamin and/or cofactor are not within the ambit of a growth regulator. Accordingly, Roth does not anticipate the subject claims for at least the reason that Roth does not disclose a vitamin/cofactor component, where such a vitamin-cofactor component is claimed in the subject claims.

However, even if it were proper to construe a vitamin and/or a cofactor as growth regulator, the Applicant respectfully submits that Roth would still not anticipate the claimed invention as growth regulators in this context define a genus and vitamin/cofactor are species of the genus. As such, the genus "growth factor" taught in the Roth reference does not anticipate the species "vitamin/cofactor" claimed in the present application.

Anticipation cannot be found where the reference teachings are so broad as to be meaningless and provide no guidance (see for example *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1572, 24 USPQ2d 1321, 1332 (Fed. Cir. 1992) wherein the Federal Circuit noted that "although [a patent's] specific claims are subsumed in [a prior art reference's] generalized disclosure ... , this is not literal identity." The reference's ranges were "so broad as to be meaningless" and provided no guidance on how to construct a product with the patent's beneficial properties. (emphasis added) See also *Ultradent Products, Inc. v. Life-Like Cosmetics, Inc.*, 127 F.3d 1065, 44 USPQ2d 1336 (Fed. Cir. 1997) wherein the Federal Circuit held that substantial evidence supported a jury verdict that a patent claim to a functionally defined chemical composition was not anticipated by a prior art reference that disclosed a broad range of possible compositions (The patentee's experts testified that the references included "millions of combinations" and "would not have directed one of ordinary skill in the art to create the claimed compositions.") (emphasis added)).

In regards to the Roth patent, the Applicant submits that Roth's definition of a growth factor as "any known chemical compounds which regulates the growth of plants" is so broad as to be meaningless and provides no guidance on how to construct a product with the patent's properties. Clearly, the term "any known chemical compound..." is broad as it encompasses an expansive list of elements which are not even limited by any class or type of chemical compound other than those that regulate the growth of plants. This list of possible chemical compositions does not direct one of ordinary skill in the art to provide a vitamin/cofactor because it is so broad as to include all known chemical compounds which regulates the growth of plants and nowhere is a vitamin/cofactor even mentioned in the reference to provide. Accordingly, Roth does not direct one to select a vitamin/cofactor from a list that includes all known growth regulators.

In fact, the M.P.E.P. describes but two situations when a genus anticipates a species, neither of which is applicable to the present situation. More specifically, the first situation of a genus anticipating a species as described in the M.P.E.P. refers to a situation wherein a reference clearly names the claimed species, as well as a number of other species. In this situation, the M.P.E.P. describes that the reference anticipates the claim no matter how many other species are named. However, in the present situation

Roth not only does not clearly name a vitamin or a cofactor, but also does not clearly name any other species of growth regulator. Thus, this situation is not analogous to the present situation.

The second situation of a genus anticipating a species as described in the M.P.E.P. refers to a situation wherein a reference discloses a generic chemical formulation. In this situation, the M.P.E.P. describes that the generic chemical formulation will anticipate a claimed species covered by the formula when the species can be "at once envisaged" from the formula. In further describing this situation, the M.P.E.P. describes that "[w]hen the compound is not specifically named, but instead it is necessary to select portions of teachings within a reference and combine them, e.g., select various substituents from a list of alternatives given for placement at specific sites on a generic chemical formula to arrive at a specific composition, anticipation can only be found if the classes of substituents are sufficiently limited or well delineated. *Ex parte A*, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990)". (emphasis added) In the present situation, Roth explicitly admits that "...plant growth regulator" refers to any of the known chemical compounds which regulates the growth of plants." (col. 3, lines 14-16). Accordingly, Roth's admission that "plant growth regulator" is used to describe the vast category of "any known chemical compounds" evidences the lack of sufficient limitation or well delineation of "plant growth regulator" when used in the Roth reference. Thus, this situation is not analogous to the present situation. The M.P.E.P. continues in this regard that "[o]ne of ordinary skill in the art must be able to draw the structural formula or write the name of each of the compounds included in the generic formula before any of the compounds can be "at once envisaged." One may look to the preferred embodiments to determine which compounds can be anticipated. *In re Petering*, 301 F.2d 676, 133 USPQ 275 (CCPA 1962). As described above, there is no disclosure in Roth, not even in the preferred embodiments described in the multiple examples, that would lead one to a vitamin or cofactor. As such, this situation is not analogous to the present situation.

As such, the Applicant respectfully submits that even if the Examiner maintains that a vitamin and/or cofactor fall within the ambit of growth factors, Roth still does not anticipate the subject claims for at least the reason that a genus growth factor does not anticipate a species vitamin/cofactor component.

Still further, this rejection appears to be based on the compositions, and not on any of the claimed methods of using the compositions. The Applicant submits that the subject compositions are analogous to compositions already patented in, for example, US Patent Nos. 5,797,976. For example, Claim 1 of US Patent No. 5,797,976 claims an aqueous composition that includes: (1) a carbon/skeleton energy component, (2) a macronutrient component having at least one water soluble nitrogen source and at least one water soluble phosphorus source, and (3) a vitamin/cofactor component, in effective amounts for stimulating the growth of plants in which the aqueous component is applied. As this rejection appears to be based on the composition itself, and not on any of the claimed methods of using the compositions, the Applicant respectfully submits that the subject claims, which include compositions analogous to compositions already-patented, are therefore patentable because compositions analogous to those claimed herein are already patented.

For at least the reasons described above, the Applicant respectfully requests that this rejection of Claims 29, 30, 43, 34, 47, 37, 48 and 40 under 35 U.S.C. §102(b) as being anticipated by Roth (4,065,287) be withdrawn.

#### OBVIOUSNESS UNDER 35 U.S.C. § 103

In the Advisory Action dated January 27, 2003, the Examiner indicated that Claim 31 remained rejected under 35 U.S.C. §103 over Roth (4,065,287) in view of Van Steenwyk (4,605,560) for the asserted reason that the combination of the references renders the present invention obvious.

The Applicant submits that a *prima facie* case of obvious cannot be sustained over the cited references for reasons analogous to those described above. More specifically, Claim 31 depends from Claim 29 which includes an attractant having a vitamin/cofactor component. As described above, Roth teaches a “growth regulator” however the Applicant submits that a vitamin/cofactor component is not taught in Roth, not even in the forty-two specific examples described in Roth. Furthermore, a vitamin/cofactor is not even suggested in Roth, as neither Roth, nor any art of record teaches or even suggests that a vitamin and/or cofactor are considered growth factors. Still further, there is no motivation for one of skill in the art to modify the invention of Roth to include a vitamin/cofactor component as neither Roth, nor any other art of record, teaches or suggests adding a vitamin/cofactor component to the Roth compositions of methanol treated activated sludge and agricultural chemical, nor does Roth or any

art of record teach that such a vitamin/cofactor is needed. As Van Steenwyk is cited solely for the use of a composition to disrupt ovipositioning of the navel orange worm, Van Steenwyk fails to overcome the deficiencies of Roth. For at least the reasons described above, a proper *prima facie* case of obvious cannot be established because Roth fails to teach each claim element. Accordingly, the Applicant respectfully requests that this rejection be withdrawn.

However, even if it were proper to construe a vitamin and/or a cofactor as growth regulator, the Applicant respectfully submits that the subject claims would still not be obvious over Roth in view of Van Steenwyk.

The M.P.E.P. at §2144.08 makes clear that a proper obviousness analysis involves three steps. First, a *prima facie* case of unpatentability should be established considering the factors set out in *Graham v. John Deere* which requires that to make out a case of obviousness, one must (a) determine the scope and contents of the prior art, (b) ascertain the differences between the prior art and the claims in issue, (c) determine the level of skill in the art, and (d) evaluate any evidence of secondary considerations. If a *prima facie* case of obviousness is established, the burden then shifts to the applicant to present rebuttal evidence of argument to overcome the *prima facie* case. Finally, the totality of facts is evaluated to determine whether they still support a conclusion of obviousness.

The M.P.E.P. also states:

In light of the findings made relating to the three Graham factors, Office personnel should determine whether one of ordinary skill in the relevant art would have been motivated to make the claimed invention as a whole, i.e., to select the claimed species or subgenus from the disclosed prior art genus. See, e.g., *Ochiai*, 71 F.3d at 1569-70, 37 USPQ2d at 1131; *Deuel*, 51 F.3d at 1557, 34 USPQ2d at 1214 ("[A] *prima facie* case of unpatentability requires that the teachings of the prior art suggest the *claimed compounds* to a person of ordinary skill in the art." (emphasis in original))

The M.P.E.P. states that to determine whether one of ordinary skill in the relevant art would have been motivated to make the claimed invention as a whole, i.e., to select the claimed species or subgenus from the disclosed prior art genus, factors such as the size of the genus and any the express teachings should be evaluated. Each of these factors will now be discussed in turn in regards to the subject claims and the teachings of Roth. The Applicant respectfully submits that these factors demonstrate that one of

ordinary skill in the relevant art would not have been motivated to make the claimed invention as a whole, i.e., to select the claimed vitamin/cofactor species or subgenus from the disclosed prior art growth regulator genus taught in Roth and thus a *prima facie* case of obviousness cannot be established.

a. Size of the Genus

As described above, Roth defines growth regulators as “any known chemical compounds which regulates the growth of plants”. Accordingly, the growth regulators of Roth include a vast number of growth regulators, indeed all known growth regulators. No particular growth regulator is even indicated or suggested in Roth from amongst the broad and expansive list of known chemical compounds which regulates the growth of plants- not even any certain class or type of growth regulator. Accordingly, the vast size of the genus supports a determination that one of ordinary skill in the relevant art would not have been motivated to make the claimed invention as a whole, i.e., not motivated to select the claimed species or subgenus of vitamin/cofactor from the disclosed prior art genus of growth regulators.

b. Express teachings

Another factor in determining whether motivation exists to select the claimed species is whether a prior art reference expressly teaches a particular reason to select the claimed species or subgenus. However, as noted above, Roth does not even mention or suggest a vitamin/cofactor. Furthermore, Roth does not even refer to a reason why a vitamin/cofactor would be needed. As Van Steenwyk is cited solely for the use of a composition to disrupt the oviposition of the navel orange worm, Van Steenwyk also fails to expressly teach a vitamin/cofactor or the need for such. Accordingly, the complete absence of any express teachings to select a vitamin/cofactor from the genus of Roth supports a determination that one of ordinary skill in the relevant art would not have been motivated to make the claimed invention as a whole, i.e., not motivated to select the claimed species or subgenus from the disclosed prior art genus.

Accordingly, even if it were proper to construe a vitamin and/or a cofactor as growth regulator, the Applicant respectfully submits that Claim 31 would still not be obvious over Roth in view of Van Steenwyk as a *prima facie* case of obviousness cannot be established because there is no motivation to select the claimed species of vitamin and/or cofactor from the growth regulator genus of Roth.

Claims 32, 33, 44 and 45 are rejected under 35 U.S.C. §103(a) as being unpatentable over Arny et al. (4,161,084) in view of Roth (4,065,287). Claims 32 recites a method of applying a composition that includes a vitamin/cofactor component to a plant to control frost damage thereof. Claims 33, 44 and 45 depend from Claim 32. The Applicant submits that a *prima facie* case of obvious cannot be sustained over the cited references for reasons analogous to those described above. Arny et al. is cited solely for disclosing a method of applying to the surface of plants non-ice nucleating microorganisms that are antagonistic to ice-nucleating microorganisms. As such, Arny et al. do not teach or suggest a composition that includes a vitamin/cofactor component or provide motivation to select a vitamin/cofactor species from the genus of Roth. As described above, Roth does not teach or suggest a vitamin/cofactor and therefore a *prima facie* case of obviousness cannot be established. Even if a vitamin/cofactor is to be construed to fall within the ambit of growth factors, a *prima facie* case of obviousness still cannot be established because Roth does not provide any motivation to select the particular species of vitamin/cofactor from the genus of growth factor. Accordingly, the Applicant respectfully requests that this rejection be withdrawn.

Claim 35, 42, 46 and 48 are rejected under 35 U.S.C. §103(a) as being unpatentable over Roth (4,065,287). Claim 35 depends from Claim 34 which recites a composition that includes a vitamin/cofactor component, Claim 42 depends from Claim 29 which also recites a composition that includes a vitamin/cofactor component, Claim 46 depends from Claim 34 which also recites a composition that includes a vitamin/cofactor component and Claim 48 depends from Claim 37 which also recites a composition that includes a vitamin/cofactor component. For reasons analogous to those described above, i.e., Roth fails to teach or even suggest a composition that includes a vitamin/cofactor component a *prima facie* case of obvious cannot be made. Even if a vitamin/cofactor is to be construed to fall within the ambit of growth factors, a *prima facie* case of obviousness still cannot be established because Roth does not provide any motivation to select the particular species of vitamin/cofactor from the genus of growth factor. Accordingly, the Applicant respectfully requests that this rejection be withdrawn.

The Examiner has maintained the rejection of Claims 36 and 41 under 35 U.S.C. §103(a) as being unpatentable over Roth (4,065,287) in view of Novitski et.al. (5,264,210). The Applicant submits that a *prima facie* case of obvious cannot be sustained over the cited references for reasons analogous to

those described above. More specifically, Claim 36 depends from Claim 34 which recites a composition that includes a vitamin/cofactor component. Claim 41 depends from Claim 40 which recites a method of treating soil to promote plant growth that includes mixing a composition having a vitamin/cofactor with the soil. Novitski et al. is cited solely for disclosing adding *P. cepacia* to seed to promote growth and does not teach or suggest a composition that includes a vitamin/cofactor component and thus fails to overcome the deficiencies of Roth. As described above, Roth does not teach or suggest a vitamin/cofactor and therefore a *prima facie* case of obviousness cannot be established. Even if a vitamin/cofactor is to be construed to fall within the ambit of growth factors, a *prima facie* case of obviousness still cannot be established because Roth do not provide any motivation to select the particular species of vitamin/cofactor from the genus of growth factor. Accordingly, the Applicant respectfully requests that this rejection be withdrawn.

Claims 38, 39, 50 and 51 are rejected under 35 U.S.C. §103(a) as being unpatentable over Novitski et al. (5,264,210) in view of Roth (4,065,287). The Applicant submits that a *prima facie* case of obvious cannot be sustained over the cited references for reasons analogous to those described above. More specifically, Claim 38 recites a composition that includes a vitamin/cofactor component. Claims 39, 50 and 51 depend from Claim 38. As described above, the combination of Roth and Novitski et al. fails to teach or suggest a composition that includes a vitamin/cofactor component and therefore a *prima facie* case of obviousness cannot be established. Even if a vitamin/cofactor is to be construed to fall within the ambit of growth factors a *prima facie* case of obviousness still cannot be established because the references still fail to provide any motivation to select the particular species of vitamin/cofactor from the genus of growth factor. Accordingly, the Applicant respectfully requests that this rejection be withdrawn as a *prima facie* case of obviousness cannot be established.

**CONCLUSION**

In view of the remarks, this application is considered to be in good and proper form for allowance and the Examiner is respectfully requested to pass this application to issue.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-0815, reference no. YAMA001CON9.

Respectfully submitted,  
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